



The economics of native plants in residential landscape designs

Gloria E. Helfand*, Joon Sik Park, Joan I. Nassauer, Sandra Kosek

*School of Natural Resources and Environment, The University of Michigan, Dana Bldg., 440 Church St.,
Ann Arbor, MI 48109-1041, USA*

Received 23 August 2004; received in revised form 20 April 2005; accepted 16 August 2005
Available online 25 October 2005

Abstract

Yard-scale landscape designs can influence environmental quality through effects on habitat, stormwater runoff, and water quality. Native plant gardens may have ecological benefits, and previous research has shown that yards using these plants can be designed in ways that people find attractive. This study examines whether people are willing to pay more for more ecologically benign designs than for a lawn. A contingent choice survey was conducted in southeast Michigan in which people were presented with four different yard designs (three of which included native plants) in three different settings, with different monthly maintenance costs for each design. Respondents were asked to rank their choices of the yards while considering the maintenance costs they were presented. Results suggest that people are willing to pay more for well-designed yards including native plants than for lawns, and that their increased willingness to pay exceeds any increase in costs associated with the native plantings. These results should encourage homeowners, landscape designers, and the landscape plant industry to work with native plants. In this study, people were willing to pay more for designs that present gains for the environment, without government intervention and without social cost.

© 2005 Elsevier B.V. All rights reserved.

Keywords: Ecological design; Landscape architecture; Native plants; Economics; Contingent choice

1. Introduction

In parts of the world dominated by humans, landscape design can have significant environmental effects. The aggregate effects of private landscapes can influence habitat and water quality, among other environmental attributes. As a result, innovative landscapes

that incorporate ecologically beneficial land cover patterns have been designed in multiple scales for private lands (Nassauer, 1993). The yard scale, the property occupied by a single residential dwelling, is relatively small, but a mosaic of environmentally beneficial yards can in the aggregate contribute to ecological health (Nassauer, 1997).

Currently, residential yards are primarily turf lawn. Lawns can contribute to environmental problems, including high fossil energy use, high chemical input use (such as pesticides, herbicides, and fertilizers),

* Corresponding author. Tel.: +1 734 764 6529;
fax: +1 734 936 2195.

E-mail address: ghelfand@umich.edu (G.E. Helfand).

health problems related to those chemicals, solid waste, high water usage, water pollution, and decreased biodiversity (Bormann et al., 1993, pp. 86–117; Templeton et al., 1999). Alternative yard designs using native plants may require less external inputs and support more biodiversity (Northeastern Illinois Planning Commission, 1998; Bormann et al., 1993; Diekelmann and Schuster, 2002, pp. 1–8). On the other hand, ecologically healthy landscapes are not always considered attractive. If alternative landscape designs do not satisfy people's views of attractive landscapes, they will not install or support them.

Nassauer (1993) has found that yards incorporating native plants can be as attractive, or even more attractive, to homeowners as conventional yards that do not include native plants. A next step in this research is to evaluate how people respond to these landscapes when faced with them in a market situation. What people consider attractive may not translate into what they would be willing to purchase, because the prices of the alternatives will affect the decision. Incorporating prices into landscape perception research sets up a linkage among ecologically oriented function, aesthetic design, and economic choice. If consumers are willing to purchase these designs at prices that designers must charge to run a viable business, then environmental gains can be achieved through private markets.

If the environmental gains from these landscapes are expected to be significant, then the economics of these designs has implications for public versus private sector roles in achieving these gains. If ecologically beneficial landscapes are economically viable at their likely costs, then private markets could be expected to offer these designs. In that case, it is possible for some environmental improvements to be achieved through the private sector, without a need for public sector intervention. Indeed, ecologically beneficial landscapes could be a “win–win” situation: both homeowners and landscape providers willingly install these designs, and the environment is improved with no additional public or private actions. If, on the other hand, people's willingness to pay for these landscapes is less than their market costs, then environmental improvements either have to come from other sources, or they must be made at net cost to homeowners, to landscape providers, or some other source.

This study employs a valuation method that examines people's willingness to pay for ecologically

beneficial landscape designs. This method, known as contingent choice, uses survey responses to estimate people's values for goods for which a market does not (currently) exist. Respondents are asked to rank their preferences for goods with different attributes and prices—in this case, yards with different levels of native plantings. Examining people's choices when attributes and prices are varied permits estimation of the tradeoffs that people see between attributes and prices. That tradeoff becomes a measure of a person's willingness to pay for a specified change in the attribute.

This paper will first provide theoretical background for the valuation exercise and the econometric model. A description of the survey design, survey area, data collection, and econometric model used for the study will follow. The next section will discuss the results, followed by the conclusion.

2. Measurement of willingness to pay in theory and practice

When economists measure the value of a good to someone, the price paid when a purchase is made is only a minimum estimate of that value; the consumer was clearly willing to pay the market price, but she might have been willing to pay even more to have the good. Instead of using price as a measure of the value of a good to a consumer, economists seek to estimate consumers' willingness to pay (WTP), the maximum amount that a person would pay to obtain a good. The difference between WTP and the actual purchase price is pure gain to the consumer and is known as consumer surplus. For marketed goods, WTP can be estimated from the demand curve for a good (the relationship between quantity purchased and the price at which that quantity is purchased), since the demand curve measures how much consumers purchase as the market price changes.

For nonmarketed goods – either goods that are not yet on the market (such as new products) or goods not traded in markets (such as most environmental goods) – it is not possible to estimate the demand curve based on direct market behavior. It might nevertheless be possible to estimate this demand, either by “revealed preference” methods that exploit the relationship of the good to a privately marketed good (such as estimating demand for neighborhood parks by looking at

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات